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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,154	01/10/2002	Evren Eryurek	30203/37762	1097

4743 7590 10/03/2003

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EXAMINER	
LE, JOHN H	

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 10/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/044,154	ERYUREK, EVREN	
	Examiner	Art Unit	
	John H Le	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 July 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19,21-34,37-41 and 44-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19,21-34,37-41 and 44-53* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. This office action is in response to applicant's amendment received on 07/24/2003.

Claims 21, 31, 37, 41, 44, 48, and 53 have been amended.

Claims 20, 35, 36, 42, and 43 have been cancelled.

The specification has been amended.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4, 6, 8, 12, 21-25, 28, 37, and 44 are rejected under 35 U.S.C. 103(a) as obvious over March (USP 6,490,506).

Regarding claims 1 and 21, March teaches a monitoring system for use in estimating the existence of cavitation in a device (e.g. Col.5, line 53-Col.6, line 5), the monitoring system comprising: a processor 76; a memory 80 that stores a characteristic curve for the device; a collection routine adapted to be executed on the processor to collect one or more operating parameters associated with the device during operation of the device; and a monitoring routine adapted to be executed on the processor that uses the one or more operating parameters (Fig.3)(e.g. Col. 8, lines 12-41) and the

characteristic curve to estimate the presence of cavitation within the device (Fig.8)(e.g. Col.12, line 52-Col.13, line 10).

Regarding claims 37, and 44, March teaches a monitoring system for use in detecing the presence of cavitation within a device (e.g. Col.5, line 53-Col.6, line 5) in a plant (e.g. Col.9, line 63-Col.10, line 22) having a processor 76, the monitoring system comprising: a memory 80 that stores a characteristic curve for the device (Fig.8)(e.g. Col.12, line 52-Col.13, line 10); a collection routine stored in the memory adapted to be executed on the processor to collect one or more operating parameters associated with the device during operation of the device; a monitoring routine adapted to be executed on the processor that uses the one or more operating parameters to estimate the presence of cavitation within the device (Fig.3)(e.g. Col. 8, lines 12-41), the monitoring rountine is adapted to detect the degradation in performance based on the characteristic curve (Fig.8)(e.g. Col.9, lines 35-59, Col.12, line 52-Col.13, line 10).

Regarding claims 2 and 22, March teaches the memory also stores a model associated with the device and wherein the monitoring routine is adapted to use the model to estimate a further operating parameter associated with the device (e.g. Col.8, lines 12-28, Col.11, lines 41-57).

Regarding claims 3 and 23, March teaches the monitoring routine is further adapted to use the estimated further operating parameter and the characteristic curve for the device to estimate the presence of cavitation within the device (e.g. Col.5, line 61-Col.6, line 5, Col.12, line 52-Col.13, line 10).

Regarding claims 4 and 24, March teaches the one or more operating parameters includes a pressure indication associated with the device and wherein the collection routine is adapted to collect the pressure indication (e.g. Col.6, lines 18-24).

Regarding claims 6 and 25, March teaches the one or more operating parameters includes a fluid flow indication associated with the device and wherein the collection routine is adapted to collect the fluid flow indication (e.g. Col.5, lines 20-23, lines 35-39, 54-60).

Regarding claim 8, March teaches the one or more operating parameters includes a pressure indication and a fluid flow indication associated with the device and wherein the collection routine is adapted to collect the pressure and fluid flow indications (e.g. Col.5, lines 20-23, lines 35-39, 54-60, Col.6, lines 18-24).

Regarding claims 12 and 28, March teaches interface circuit 78 communicates control signals from central processing circuit 76 to an operator interface 86 for displaying operating conditions, such as the head loss across trash rack 44 or cost values associated with current trash rack losses or other operating parameters. Operator interface 86, which typically includes a computer monitor situated in a control station for facility 16, may also display or sound visual or audible alarms, such as when trash rack losses exceed predetermined threshold levels (Col.8, lines 7-11). Although March does not specifically disclose the claimed alerting a user when the monitoring routine estimates the presence of cavitation within the device, however it would have been obvious to one of ordinary skill in the art at the time the invention was made to teach alerting a user when the monitoring routine estimates the presence of cavitation

within the device since the operator interface 86, which typically includes a computer monitor situated in a control station for facility 16, may also display or sound visual or audible alarms, such as when trash rack losses exceed predetermined threshold levels (Col.8, lines 7-11).

4. Claim 5, 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over March (USP 6,490,506) in view of Dhindsa et al. (USP 5,846,056).

Regarding claims 5, 7, and 9, March fails to disclose the one or more operating parameters includes a suction pressure indication and a suction fluid flow indication.

Dhindsa et al. disclose the operating parameters include a suction pressure indication and a suction fluid flow indication (Col.5, lines 32-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a suction pressure indication and a suction fluid flow indication as taught by Dhindsa et al. in a hydroelectric power generation facility of March for the purpose of providing a control circuit utilizing the cylinder head pressure determines values of certain system parameters, controls the operation of the pump system in accordance with programmed instructions, and activates alarms if the values of certain system parameters fall outside their respective predetermined norms (Dhindsa et al., Col.1, lines 43-49).

5. Claims 10-11, 13, 26-27, 29, 39-40, and 46-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over March (USP 6,490,506) in view of Ferme et al. (USP 6,152,684).

Regarding claims 10-11, 26-27, 29, 39-40, and 46-47, March fails to disclose determine a net positive suction head available in the device, calculate the ratio of the net positive suction head available and the net positive suction head required for the device and to compare the ratio to a predetermined threshold.

Ferme et al. teach determine a net positive suction head available in the device, calculate the ratio of the net positive suction head available and the net positive suction head required for the device and to compare the ratio to a predetermined threshold (Col.5, line 40-Col.6, line 11/Col.7, lines 32-57).

Regarding claim 13, March fails to disclose the characteristic curve defines a net positive suction pressure required for the device.

Ferme et al. teach the characteristic curve defines a net positive suction pressure required for the device (Col.7, lines 32-57).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include calculating the ratio of a net positive suction head and comparing the ratio to a predetermined threshold, the characteristic curve defines a net positive suction pressure as taught by Ferme et al. in a hydroelectric power generation facility of March for the purpose of providing a process for operating a hydraulic machine, to detect the cavitation limits as exactly as possible, so that, on the one hand, cavitation safety is given to a still higher degree and that, on the other hand, there is obtained a maximal utilization of the machine performance (Ferme et al., Col.2, line 65-Col.3, line 3).

6. Claims 14-17, 21, 30, 38, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over March (USP 6,490,506) in view of Seale et al. (USP 6,208,497).

Regarding claims 14-16, 21, 30, 38, and 45, March fails to disclose the characteristic curve is a voltage-current characteristic curve for the device, wherein the one or more operating parameters are associated with electrical operating parameters of the device and wherein the monitoring routine is adapted to use the electrical operating parameters of the device to detect whether the device is operating in accordance with the voltage-current characteristic curve of the device.

Seale et al. teach the characteristic curve is a voltage-current characteristic curve for the device, wherein the one or more operating parameters are associated with electrical operating parameters of the device and wherein the monitoring routine is adapted to use the electrical operating parameters of the device to detect whether the device is operating in accordance with the voltage-current characteristic curve of the device (Col.50, lines 22-67/Col.51, lines 3-11), the voltage-current characteristic curve is a voltage-current characteristic curve for the device operating without cavitation (Col.77, lines 52-55).

Regarding claim 17, Seale et al. teach the device including high frequency fluctuations (Col.68, lines 36-42).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the characteristic curve is a voltage-current characteristic curve for the device and the device including high frequency fluctuations as taught by Seale et al. in a hydroelectric power generation facility of March for the purpose of

providing a solenoid system driven by a switching amplifier with duty cycle control, is to employ the measured AC fluctuation in current slope as a sense parameter of the servo controller (Seale et al., Col.5, lines 46-60).

7. Claims 18-19, 31-34, 41, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over March (USP 6,490,506) in view of Dorchak (USP 5,161,110).

Regarding claims 18-19, 31-34, 41, and 53, March fails to disclose the monitoring system includes an expert engine, wherein the expert engine is a neural network, the expert engine includes step using a trending analysis, a fractal analysis.

Dorchak teaches the monitoring system includes an expert engine, wherein the expert engine is a neural network (Col.3, lines 55-60/Col.5, lines 54-68), the expert engine includes step using a trending analysis (Col.3, lines 64-67), a fractal analysis (Fig.2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include an expert engine, wherein the expert engine is a neural network as taught by Dorchak in a hydroelectric power generation facility of March for the purpose of providing a hierarchical process control system, which substantially eliminates or reduces disadvantages and problems associated with prior control systems (Dorchak, Col.2, lines 20-24).

8. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over March (USP 6,490,506) in view of Fisher et al. (USP 5,754,446).

Regarding claim 48, March fails to disclose a pump mechanism.

Fisher et al. disclose a pump mechanism (e.g. Col.4, lines 49-52).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a pump mechanism as taught by Fisher et al. in a system for monitoring maintenance information in a hydroelectric power generation facility of March for the purpose of providing a method for optimizing performance of a Kaplan turbine power generating unit (Fisher et al., Col.2, lines 63-64).

9. Claims 49-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over March (USP 6,490,506) in view of Fisher et al. (USP 5,864,183).

Regarding claims 49-52, March fails to disclose the pump includes an impeller and the device includes a flow rate sensor.

Fisher 183' teaches the pump the pump includes an impeller 29 (Fig.4) (Col.4, lines 42-52), and the device includes a flow rate sensor 76 (Col.5, lines 48-57).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include an impeller and a flow rate sensor as taught by Fisher 183 in a hydroelectric power generation facility of March for the purpose of providing improving or optimizing pumping mode performance of a pump-turbine (Fisher 183', Col.2, lines 31-35).

Response to Arguments

10. Applicant's arguments filed 07/24/2003 have been fully considered but they are not persuasive.

-Applicant argues that the prior art fails to teach or suggest "use of characteristic curve to estimate the presence of cavitation ".

- March teaches use of characteristic curve to estimate the presence of vibration or cavitation level (e.g. Col.12, lines 52-65).

Conclusion

11. Specifically March has been added to second ground of rejection.

Contact Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John H. Le whose telephone number is (703) 605-4361. The examiner can normally be reached on Monday to Friday from 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. John Barlow, can be reached at (703) 308-3126. The facsimile number for Technology Center 2800 is (703) 308-5841.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist of the Technology Center whose telephone number is (703) 308-0956.

John H. Le

Patent Examiner-Group 2863

September 8, 2003

John Barlow
Supervisory Patent Examiner
Technology Center 2800